

**YUKON AREA COMMERCIAL, SUBSISTENCE, AND PERSONAL USE SALMON FISHERIES
1990 MANAGEMENT PLAN**

By

**Alaska Department of Fish and Game
Division of Commercial Fisheries
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TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
STATUS OF STOCKS AND FISHERY.....	2
U.S./Canada Treaty Negotiations.....	2
Chinook Salmon.....	2
Summer Chum Salmon.....	3
Fall Chum Salmon.....	3
Coho Salmon.....	4
OUTLOOK FOR 1990.....	5
Chinook Salmon.....	5
Summer Chum Salmon.....	5
Fall Chum Salmon.....	5
Coho Salmon.....	6
REGULATIONS.....	6
<i>Subsistence.....</i>	<i>6</i>
<i>Personal Use.....</i>	<i>7</i>
<i>Commercial.....</i>	<i>7</i>
MANAGEMENT STRATEGY-LOWER YUKON AREA (DISTRICTS 1, 2, AND 3).....	8
<i>Commercial Fisheries.....</i>	<i>8</i>
Chinook and Summer Chum Salmon.....	8
<i>Fishing Season.....</i>	<i>8</i>
<i>Fishing Periods.....</i>	<i>9</i>
Fall Chum Salmon.....	10
Coho Salmon.....	10
<i>Subsistence and Personal Use Fisheries.....</i>	<i>11</i>

TABLE OF CONTENTS (continued)

MANAGEMENT STRATEGY-UPPER YUKON AREA (DISTRICTS 4, 5, AND 6)	11
<i>Commercial Fisheries</i>	11
District 4	12
<i>Chinook and Summer Chum Salmon</i>	12
<i>Fall Chum and Coho Salmon</i>	13
District 5	13
<i>Chinook and Summer Chum Salmon</i>	13
<i>Fall Chum and Coho Salmon</i>	14
District 6	14
<i>Chinook and Summer Chum Salmon</i>	15
<i>Fall Chum and Coho Salmon</i>	15
<i>Subsistence Fishery</i>	16
Districts 4 and 5	16
District 6	17
<i>Personal Use Fishery</i>	17

STATUS OF STOCKS AND FISHERY

U.S./Canada Treaty Negotiations

There have been treaty negotiations between the U.S. and Canada regarding chinook and chum salmon originating in the Canadian portion of the drainage since 1985. Recently, negotiations were held in late March and late April, 1990. At these meetings the Parties agreed to Canadian harvest shares during run rebuilding. Canada will endeavor to manage the harvest of chum salmon in the mainstem Yukon River drainage in Canada within a guideline harvest range of 23,600 in years of weak returns and 32,600 in years of strong returns. Canada will endeavor to manage the harvest of chinook in the mainstem Yukon River drainage in Canada within a guideline harvest range of 16,800 in years of weak returns and 19,800 in years of strong returns. Note that these harvests include both commercial and non-commercial catches.

The Parties agreed to a minimum spawning escapement objective of 18,000 for the Canadian mainstem stock for six years beginning in 1990. During this period of time the U.S. will endeavor to deliver annually between 34,800 and 37,800 chinook salmon to the Canadian border on the mainstem Yukon River. No spawning escapement objective has been agreed to for chum salmon originating in Canada.

Chinook Salmon

The Yukon River commercial salmon fishery in Alaska dates back to 1918. Commercial chinook salmon catches have ranged from 64,000 to 158,000 fish since 1961 (Table 1), and the recent 5-year average (1985-1989) is 116,800 fish (lower river districts 110,200, upper river districts 6,600). The majority of the commercial harvest occurs in Districts 1 and 2 (Figure 1). In addition to the Alaskan catch, the commercial fishery at Dawson (Yukon Territory) harvests an average of 11,400 chinook salmon annually (1985-1989) (Table 3). Throughout the Yukon River drainage, the recent 5-year average subsistence chinook salmon harvest is approximately 53,000 fish (45,400 U.S., 7,600 Canadian) (Tables 2 and 3).

Information acquired through scale pattern analysis (SPA), genetic stock identification (GSI), and tagging studies indicate that upper river (Canadian) chinook salmon stocks have undergone unacceptably high harvest rates in recent years. These harvest rates were estimated to range from 69% to 91% in recent years. Based on studies in other areas, harvest rates in excess of 67% will likely result in a serious decline in chinook salmon abundance; this situation must be offset by reduced harvests to ensure the stocks are sustained.

Exploitation rates cannot be accurately estimated at this time for lower (Yukon River drainage below the Koyukuk River) and middle river (primarily Tanana River drainage) chinook salmon stocks due to the lack of reliable total population estimates. However, aerial survey escapement data indicate that middle river stocks may have been overexploited during some years and that lower river stocks have not been overharvested in recent years.

There is a strong possibility that chinook salmon commercial harvests in Alaska will be near the lower end of the guideline harvest ranges during the 1991-1993 seasons due to the relatively low escapements of Canadian stocks in 1985-1987.

Summer Chum Salmon

Prior to the mid-1960's, summer chum salmon were used primarily for subsistence purposes, mostly for sled dog food. Beginning in 1967, commercial fishing regulations affecting summer chum salmon were gradually liberalized as subsistence fishing declined. As a result of regulation changes, increased fishing effort and processing capacity, and salmon roe fisheries, the Yukon River summer chum salmon commercial harvest has increased sharply. The recent 5-year average commercial harvest is 758,000 fish in-the-round and 237,000 pounds of roe (Table 1). The majority of the commercial harvest takes place in Districts 1, 2, and 4. District 4 supports what has become primarily a salmon roe fishery. Approximately 274,000 summer chum salmon are taken annually (1984-1988 average) for subsistence use throughout the drainage (Table 2).

Summer chum and chinook salmon exhibit similar run timing and enter the lower river during June and early July. The Andreafsky and Anvik Rivers are the major summer chum salmon-producing rivers. Escapement of over one million summer chum salmon in the Anvik River has occurred three times since sonar enumeration within this drainage began in 1979. The Koyukuk, Nulato, and Tanana Rivers are also important summer chum salmon-producing systems. Documented harvests and escapements yield minimum population estimates ranging from 1.2 to 5.6 million fish annually. With the exception of 1987, Yukon River summer chum salmon escapements have generally been fair to good in recent years.

Fall Chum Salmon

Because of their good quality (bright, silvery appearance, large size, robust appearance, and high oil content) which is related to their upriver spawning destinations, fall chum salmon are in great demand. The 1985-1989 average commercial harvest in Alaska was 162,000 fish (Table 1), while in the Yukon Territory of Canada approximately 28,000 have been taken annually (Table 3). Fall chum salmon are of greater importance for subsistence than summer chum salmon upstream of the mouth of the Koyukuk River where it is

estimated that fall chum salmon compose 60%-75% of the total subsistence harvest. Approximately 217,000 fall chum salmon have been taken annually (1984-1988 average) for subsistence throughout the drainage (Tables 2 and 3).

Fall chum salmon enter the lower Yukon River from mid-July through early September. Major spawning areas are located in the Tanana River (Toklat River, Delta River, and the upper Tanana River near Big Delta), the Porcupine River (Sheenjek and Fishing Branch Rivers), and the Canadian portion of the Yukon River (Kluane and in mainstem Yukon River) drainages. Historical tagging studies near Galena and Ruby indicated that the early segment (mid July through early August) of fall chum salmon may be bound primarily for the Porcupine River system and Yukon Territory systems. The later segment of the fall chum salmon run (mid-August through early September), although likely mixed with other stocks, is believed to be destined primarily for the Tanana River drainage. Stock identification studies using protein genetics are presently underway to improve our understanding of fall chum salmon timing by spawning stock in the lower river fishery.

During the 1980's, the abundance of fall chum salmon declined due to escapements below objective levels from 1982 through 1984. A relatively large return in 1985 with restricted fishing periods in place resulted in improved escapements. Additional regulatory restrictions were adopted by the Board prior to the 1986 season to reduce the risk of overharvesting anticipated weak returns in 1986, 1987, and 1988. These regulatory restrictions included reducing guideline harvest ranges in all districts and a July 15 closure in the Lower Yukon Area.

Spawning escapements have generally improved during the late 1980's. However, the Toklat River stock and the Yukon River mainstem stock in Canada have shown less improvement than other spawning areas. It should be noted that because of shortcomings inherent in available run assessment techniques, a tendency in some years to allow overharvest, and an apparent trend of increasing subsistence harvests, the 1990 fall chum fishery, in all districts, will be managed in a conservative fashion.

Coho Salmon

This species is of lesser importance in both the commercial and subsistence fisheries and is taken incidental to the more numerous fall chum salmon. The 1985-1989 average Alaskan commercial catch is approximately 55,000 fish (Table 1). The commercial harvest of coho salmon is dependent upon the timing of the fall chum salmon fishing season. Annual subsistence catches throughout the drainage are approximately 54,000 fish.

Coho salmon begin entering the lower Yukon River about 2 weeks later than fall chum salmon and the run peaks during late August.

Spawning occurs discontinuously throughout the drainage with the largest spawning concentrations documented in the tributaries of the upper Tanana River drainage.

OUTLOOK FOR 1990

Chinook Salmon

The majority of chinook salmon returning to the Yukon River are 6-year old fish, however, 5 and 7-year old fish make a significant contribution to the run. In general, spawning ground escapements in 1984, the primary brood year (age 6 in 1990), were judged to be average in magnitude. Survival and production of the 1984 brood year is apparently average based on observation of a normal contribution of 5-year old fish to the 1989 commercial catch. It is expected that the 1990 return of 5-year-olds (1985 brood year) will be average based on near average escapements during 1985 and average proportion of 4-year old fish in the 1989 commercial catch. The return of 7-year old fish (1983 year class) is expected to be average, as the return of this year class in 1988 as 5-year olds, and in 1989 as 6-year olds was average. Overall, the 1990 chinook salmon return is anticipated to be average in strength. The commercial harvest in Alaska is expected to total 85,000 to 107,00 chinook salmon (80,000-100,000) fish in the Lower Yukon Area, 5,000-7,000 fish in the Upper Yukon Area).

Summer Chum Salmon

Summer chum salmon return primarily as 4-year old fish, although substantial 5-year old returns often result from brood years with high survival rates. The return of 4-year old fish in 1990 will be dependent on production from the 1986 brood year and survival of the resulting cohort. Based on available catch and escapement data, the magnitude of the 1986 summer chum salmon run was judged to be above average in abundance. In addition, the return of 5-year old fish in 1990 is expected to be above average in strength based upon the above average return of 4-year old fish in 1989. The Anvik River summer chum salmon stock is expected to be the primary contributor to the 1990 return. In summary, based on evaluation of brood year run size data and assuming average survival, it is expected that the Yukon River summer chum salmon return in 1990 will be above average in magnitude. The commercial harvest is expected to be 800,000-900,000 fish and approximately 200,000 pounds of roe.

Fall Chum Salmon

Similar to summer chum salmon, fall chum salmon return primarily as 4-year old fish. Escapements in 1986 (the brood year which will produce 4-year old fish in 1990) ranged from below objective levels

in the Tanana River drainage and Fishing Branch River to about average levels in other streams. The contribution of age 3 fall chum salmon in the 1989 return was below average which, when combined with available escapement data, suggests a below average to average return of 4-year-olds in 1990. The return of 5-year old fish (1985 brood year) is expected to be above average overall based on the strong contribution of age 4 fall chum salmon in the 1989 harvest and above average escapements in the majority of systems in 1985. In summary, based on evaluation of brood year escapements and assuming average survival rates, the overall fall chum salmon return is expected to be average in 1990. The commercial harvest is anticipated to be near 200,000 fall chum salmon (approximately 140,000 in the Lower Yukon Area and 60,000 fall chum and coho salmon combined in the Upper Yukon Area).

A more comprehensive analysis of fall chum salmon information including estimates of total return sizes, maturity schedule and return per spawner data resulted in a return projection of 784,000 fish. The current drainage-wide escapement objective using this method is 312,000 fall chum salmon. The recent five year average (1984-1988) drainage-wide subsistence harvest was approximately 191,000 fish. Thus, a total of 281,000 fall chum may be available for commercial fisheries (including Canadian harvests). However, with a relatively poor return to the Tanana River drainage anticipated, and the mixed stock nature of the fisheries, the commercial harvest will probably not reach this level in order to achieve escapement objectives.

Coho Salmon

Coho salmon return primarily as 4-year old fish. Comprehensive escapement information for coho salmon is lacking, but escapement surveys in the Tanana River system indicated average run strength in 1986. The commercial harvest is expected to be 30,000-60,000 fish and will be dependent on the timing and frequency of fishing periods allowed for fall chum salmon.

REGULATIONS

There are new regulations this year that will affect the management of Yukon River fisheries. The following regulations were adopted by the Alaska Board of Fisheries in Anchorage in February 1990:

Subsistence

The Toklat River and the Kantishna River, from the confluence of the Toklat River to the Tanana River, are closed to subsistence, personal use, and sport fishing for chum salmon from August 15 through December 31.

Personal Use

The sunset date for the personal use salmon fishery regulations was repealed. An annual personal use possession limit was established for Subdistricts 6-A and 6-B in the Tanana River. The annual possession limit per permit holder is 10 chinook salmon and 75 chum salmon through August 15, and 75 chum and coho salmon combined for periods after August 15. This is consistent with regulations previously established for Subdistrict 6-C.

Under authority of a permit, whitefish and suckers may be taken only in the drainages of Districts 5 and the Tanana River drainage for personal use. The Department will use discretion in issuance of permits based on resource abundance, sustained yield, and maintaining an orderly fishery. Gear will be limited to set nets, beach seines, and fish wheels.

Commercial

The commercial fishing seasons in Districts 5 and 6 will now be opened and closed by emergency order.

The guideline harvest range for fall chum salmon was increased to 72,750 to 320,500 fish and distributed as follows:

1. Districts 1, 2, and 3: 60,000 to 220,000 chum salmon.
2. Subdistricts 4-B and 4-C: 5,000 to 40,000 chum and coho salmon, combined.
3. Subdistricts 5-A, 5-B, and 5-C: 4,000 to 36,000 chum and coho salmon, combined.
4. Subdistrict 5-D: 1,000 to 4,000 chum and coho salmon, combined.
5. District 6: 2,750 to 20,500 chum and coho salmon, combined.

The Subdistrict 6-A commercial fishing schedule was reduced to no more than one 24 hour period per week during the fall season.

A Yukon River summer chum salmon management plan was formulated. A guideline harvest range of 400,000 to 1,200,000 summer chum salmon was established, distributed as follows:

1. Districts 1 and 2: 251,000 to 755,000 summer chum salmon.
2. District 3: 6,000 to 19,000 summer chum salmon.
3. Subdistrict 4-A: 113,000 to 338,000 summer chum salmon or the equivalent roe poundage of 61,000 to 183,000 pounds, or some combination of numbers of fish and pounds of roe.
4. Subdistricts 4-B and 4-C: 16,000 to 47,000 summer chum salmon.
5. District 5: 1,000 to 3,000 summer chum salmon.
6. District 6: 13,000 to 38,000 summer chum salmon.

In addition, no more than 183,000 pounds of summer chum salmon roe

from Subdistrict 4-A catches may be sold annually. However, if the roe cap is reached, fishing effort may continue, but only the sale of chum salmon in-the-round will be allowed. All salmon caught by CFEC permit holders during commercial periods in Subdistrict 4-A will be reported in numbers on fish tickets. Fish taken from commercial catches in Subdistrict 4-A and used for subsistence purposes are to be reported in the commercial catch.

Regulations applying to operation of fishing gear were also changed. A person who holds a CFEC permit for stationary fishing gear must be physically present at a beach or riparian fishing site during the operation of net gear or other stationary fishing gear at the site except when the permit holder is at or traveling to or from the location of: 1) a sale of fish caught in the gear; or 2) other stationary gear of the permit holder. For the purposes of this section "fishing site" includes any structure used for providing shelter or support of the operation of net gear or other stationary fishing gear. In the Yukon Area the permit holder must be physically present for the initial deployment and termination of gear operation for each commercial fishing period.

An addition was made to statewide regulations regarding identification of stationary fishing gear. The keg, buoy, or cluster of floats must bear only a single number (the five digit CFEC permit number), and this number must be that of the permit holder operating the gear.

MANAGEMENT STRATEGY - LOWER YUKON AREA (DISTRICTS 1, 2, AND 3)

Commercial Fisheries

Chinook and Summer Chum Salmon

Sustained yield management of the chinook and summer chum salmon runs is made difficult by the overlapping run timing of these species. The harvest of summer chum salmon, for example, can be largely a function of management strategies and actions applied to the chinook salmon fishery. In Districts 1 and 2, the chinook and summer chum salmon harvests are managed by field announcement to schedule season openings and closures, fishing periods and gill net mesh size restrictions. The Alaska Board of Fisheries has established a chinook salmon guideline harvest range of 60,000 to 120,000 fish for Districts 1 and 2 combined, and 1,800 to 2,200 for District 3. The guideline harvest range for summer chum salmon is 251,000 to 755,000 fish for Districts 1 and 2 combined, and 6,000 to 19,000 fish for District 3.

Fishing Season

The directed commercial chinook salmon fishery will open by emergency order on a staggered basis beginning with District 1,

when increasing subsistence and/or test-net catches have occurred over a 7 to 10 day period. This strategy of allowing the early portion of the run to build, prior to commercial fishing, provides for uninterrupted subsistence fishing in the Lower Yukon Area, and provides for passage of a portion of the early run segment out of the lower Yukon districts prior to commercial harvest. The fish that pass out of the lower districts are bound primarily for middle and upper river areas and are subject to intensive harvest pressure along the entire course of their migration.

Fishing Periods

Unrestricted mesh size fishing periods will initially be 12 hours in duration. In District 1, fishing periods will begin at 6:00 p.m. on Mondays or Thursdays and continue until 6:00 a.m. the following day. In Districts 2 and 3, unrestricted mesh size fishing periods will begin at 6:00 p.m. Wednesdays or Sundays and continue until 6:00 a.m. the following day. District 3 fishing periods will occur simultaneously with District 2 fishing periods. The District 3 fishing season may close prior to District 2 if the chinook salmon guideline harvest range is reached and because of lower marketability of fish late in the run.

If run strength and harvest levels develop as anticipated, the use of unrestricted mesh size gill nets will cease when the combined Districts 1 and 2 harvest approaches 60,000 chinook salmon. The harvest of chinook salmon in gill nets restricted to 6-inch maximum mesh size averaged 23,000 fish during 1984-1988, with a record small mesh catch of 39,500 chinook salmon in 1988. It is expected that the total commercial harvest of chinook salmon from unrestricted and restricted mesh size periods will be approximately 90,000 fish. If the run is judged to be below average in-season, then the harvest will be reduced by decreasing fishing time.

Special summer chum salmon directed fishing periods will be implemented if the return: 1) is judged to be at least average in strength, and 2) occurs with similar timing to the chinook salmon return. These fishing periods are anticipated to be 6 to 12 hours in duration prior to or during the chinook salmon directed season. Following the chinook salmon directed fishery, 6-inch maximum mesh size fishing periods are anticipated to be 12 to 24 hours in duration depending on the strength of the later portion of the summer chum salmon return. As with other salmon stocks, an effort will be made to spread the harvest out over the run, so that no one segment is over exploited. The summer chum salmon harvest should be near the upper end of the guideline harvest ranges due to the anticipated strong return. The summer season commercial fishery will close July 15 or earlier if the summer chum salmon guideline harvest range is reached. The guideline harvest range may be exceeded if the return is very strong.

Since Districts 1 and 2 have combined guideline harvest ranges, the

overall harvest level will determine when the directed chinook salmon and summer chum salmon seasons end. It may not be possible to allow an equal amount of fishing time for each district. Summer chum salmon escapements to the Andreafsky River will be monitored in-season by aerial surveys. The closed water marker, at the confluence of the south bank of Andreafsky River and the Yukon River, will be moved downstream during the season if the passage rate of summer chum salmon to the Andreafsky River does not indicate an optimum number of fish will reach the spawning grounds.

Fall Chum Salmon

The summer commercial fishing season will close no later than July 15 in Districts 1, 2, and 3 in order to assess fall chum run size and to provide for passage of a portion of the early run segment out of the Lower Yukon Area. The Department will monitor in-season estimators of abundance (lower Yukon test fishery, Yukon sonar, the middle Yukon test fish wheel, and subsistence catches) in order to assess run strength. These data, in combination with the pre-season projection, will constitute the basis for decisions regarding management of these stocks. It is expected that the commercial fishing season will reopen after a season closure of approximately 10 days to 3 weeks.

After the initial fishing period, subsequent openings will be based on evaluation of catch, run strength and fish passage by the Pilot Station sonar. The total season harvest is expected to be near 140,000 fall chum salmon for Districts 1, 2, and 3 combined.

Period length will likely be 12 hours in the Set Net Only Area of District 1, and 6 hours duration in the remainder of the Lower Yukon Area. Fishermen will be required to register for the Set Net Only Area prior to the opening of the fall fishery as during recent years. Fishing periods in the Set Net Only Area will probably be scheduled to occur during nighttime hours, while fishing periods in the remainder of the Lower Yukon Area will be scheduled for daylight hours.

The return of Tanana River drainage fall chum stocks is expected to be relatively poor. Run timing information indicates that these stocks probably make up a larger proportion of the later segment of the fall chum salmon run. Therefore, it is anticipated that the fall season commercial fishery will end near the middle of August to lessen the exploitation rate on these stocks.

Coho Salmon

Coho and fall chum salmon runs overlap to a considerable extent, but the peak of the coho salmon run usually occurs later in the season. Because of this overlap, and because of the overriding importance of the fall chum run, the harvest of coho salmon will be a function of management strategies directed towards fall chum

salmon. The coho salmon commercial harvest will probably be lower than recent years since the fall season is expected to close during mid-August.

Subsistence and Personal Use Fisheries

In the Lower Yukon Area, salmon may be taken by subsistence fishermen seven days per week until 24 hours prior to the opening of the commercial fishing season, and beginning 24 hours after the end of the commercial fishing season. During the commercial fishing season, subsistence fishing is allowed only during open commercial fishing periods. In addition, 24 hour subsistence only fishing periods will be established every other weekend during the commercial fishing season through July 19, and each weekend during the fall commercial fishing season.

Personal use fishing is open during the same times as subsistence fishing.

MANAGEMENT STRATEGY - UPPER YUKON AREA (DISTRICTS 4, 5, AND 6)

Commercial Fisheries

The chinook and summer chum salmon season, commonly known as the early season, occurs from June 15 through August 1 in Districts 4 and 5, and from June 15 through August 10 in District 6. The fall chum and coho salmon season commonly referred to as the late season, occurs from August 2 through September 30 in Districts 4 and 5, and from August 11 through September 30 in District 6.

Commercial fishermen are not allowed to transfer between the three districts in-season. Initial district registration is accomplished by indicating on the fish ticket for the first delivery of the season the district in which the permit holder took salmon. Fishermen can move freely between subdistricts within the registered district.

Processors and purchasers of salmon must be registered with the Fairbanks ADF&G office and are required to verbally report their purchases within 18 hours following the closure of a commercial fishing period. Buyers are reminded that reporting salmon purchases in a timely manner is essential for the management of these fisheries. Fish tickets are required to be postmarked or delivered to the Fairbanks office within 36 hours following the closure of a commercial fishing period. In the event of incomplete reporting, commercial fishing periods may be delayed until the department has received the needed harvest information.

Additionally, new statistical reporting areas have been added for Districts 4 and 5. Proper reporting of salmon harvests by area aids the department in managing these complex fisheries. Informational packets with maps and processor reporting requirements are available from the Fairbanks Division of Commercial Fisheries office.

District 4

The District 4 commercial fishing season opens by regulation between June 15 and June 25. For the past two seasons, the first commercial opening occurred in the later portion of this range. This management strategy will continue for the 1990 season. However, unlike past seasons, the first commercial fishing period for District 4 will be 24-hours in duration. This strategy of delaying the opening of the season and reducing the length of the first period will allow distribution of the run throughout the district and reduce the harvest of earlier running spawning stocks. After the first 24-hour period, subsequent openings will be two 48-hour periods per week, from 6:00 p.m. Sunday until 6:00 p.m. Tuesday, and from 6:00 p.m. Wednesday until 6:00 p.m. Friday, unless altered by emergency order.

Chinook and Summer Chum Salmon

District 4 has a chinook salmon guideline harvest range of 2,250 to 2,850 fish. Based on preseason projections, the department will manage for the mid-point of the chinook salmon guideline harvest range. The early season in District 4 will close when the targeted chinook or summer chum salmon harvest is reached or by regulation on August 1.

Unlike the chinook salmon guideline harvest range which is for the entire district, the summer chum salmon guideline harvest range is further divided between subdistricts. The Subdistrict 4-A guideline harvest range is 113,000 to 338,000 summer chum salmon, or roe equivalent of 61,000 to 183,000 pounds. Subdistricts 4-B and 4-C have a combined guideline harvest range of 16,000 to 47,000 summer chum salmon.

A limit for roe sales in Subdistrict 4-A of 183,000 pounds of roe has been established. The guideline harvest range may be exceeded only during strong summer chum salmon returns, however, when the "roe cap" is reached, only the sale of fish in-the-round will be allowed in Subdistrict 4-A. Additionally, all salmon caught by CFEC permit holders during commercial periods will be reported, in numbers, on fish tickets. All fish, including males, taken from commercial catches during Subdistrict 4-A commercial fishing periods and used for subsistence purposes are to be accounted for on fish tickets and reported in the commercial catch. This requirement is necessary to avoid double counting when conducting subsistence surveys, and to assist the department in obtaining more

accurate catch figures.

During the early season, the department may restrict commercial set net gear to 6-inch maximum mesh size when it appears that the mid-point of the chinook salmon guideline harvest range may be reached prior to the targeted summer chum salmon harvest. This restriction would reduce the harvest of large chinook salmon and still allow commercial fishing for the more abundant summer chum salmon.

Fall Chum and Coho Salmon

Current regulations do not provide for a commercial season for fall chum salmon in Subdistrict 4-A. The fall commercial fishing season in Subdistricts 4-B and 4-C will reopen after August 1 by emergency order, and will be closed by regulation on September 30 or by emergency order when the targeted combined fall chum and coho salmon harvest is reached. The guideline harvest range is 5,000 to 40,000 fall chum and coho salmon for Subdistricts 4-B and 4-C. Based on the preseason projection, the department will be managing for the mid-point of this range, 22,500 fish.

District 5

Commercial fishing seasons will be opened and closed by emergency order in District 5. The early and late seasons will be opened once it is determined that the run is well distributed throughout the area. Run strength and timing will be based on department test fisheries, local subsistence catch reports, and indications of run strength and timing from the lower commercial fishing districts. Subdistricts 5-A, 5-B and 5-C will be open for two 48-hour periods per week during the early season, unless altered by emergency order, from 6:00 p.m. Tuesday until 6:00 p.m. Thursday, and from 6:00 p.m. Friday until 6:00 p.m. Sunday. During the late season commercial fishing periods will probably be reduced to 24-hours in duration as in recent years.

For Subdistrict 5-D, the regulatory commercial fishing schedule is 7 days per week. However, similar to 1989, the department will use emergency order authority to reduce the Subdistrict 5-D commercial fishing schedule to parallel the commercial fishing schedule in the remainder of District 5. This will allow the department to monitor and maintain the harvest within the guideline harvest range.

Chinook and Summer Chum Salmon

Subdistricts 5-A, 5-B and 5-C have a guideline harvest range of 2,400 to 2,800 chinook salmon. In addition, there is a district-wide guideline harvest range of 1,000 to 3,000 summer chum salmon. Based on preseason projections, the department will be managing for the mid-point of the chinook and the upper end of the summer chum guideline harvest ranges. In years with average returns and normal

run timing, the first commercial fishing period in Subdistricts 5-A, 5-B and 5-C should occur between June 25 and July 1. When the mid-point of chinook salmon or the upper end of the summer chum salmon guideline harvest ranges have been harvested, the early season in Subdistricts 5-A, 5-B, and 5-C will be closed.

A separate guideline harvest range of 300 to 500 chinook salmon has been established for Subdistrict 5-D. The first commercial fishing period in years with average returns and normal run timing should occur between July 1 and July 7. When the mid-point of chinook salmon guideline harvest range is reached, the early season will be closed.

Fall Chum and Coho Salmon

Subdistricts 5-A, 5-B and 5-C have a guideline harvest range of 4,000 to 36,000 fall chum and coho salmon combined. In years with average returns and normal run timing, the first commercial fishing period in Subdistricts 5-A, 5-B and 5-C should occur in mid-August. Based on preseason projections, the department will be managing for the mid-point of the fall chum salmon guideline harvest range. When the mid-point of 20,000 fish is taken, the late season will be closed by emergency order.

For Subdistrict 5-D, a separate guideline harvest range of 1,000 to 4,000 fall chum and coho salmon combined is established. In years with average returns and normal run timing, the first commercial fishing period in Subdistrict 5-D should occur in early September. The commercial fishing season will close on September 30, or earlier if the mid-point of the fall chum and coho salmon guideline harvest range of 2,500 fish is reached.

District 6

In the spring of 1988, the Board of Fisheries held a special session in Fairbanks to discuss and evaluate the department's fishery management plan for the Tanana River. At this meeting, the Board of Fisheries instructed the department to continue to manage District 6 on the basis of guideline harvest ranges. However, the Board of Fisheries did sanction managing District 6 as a terminal fishery area. This allows the department to exceed guideline harvest ranges in years when escapement objectives and subsistence needs will not be jeopardized.

Presently, the Tanana River in-season run strength and timing indicators include comparative, daily test fish wheel catches near the villages of Manley and Nenana, aerial surveys, and the performance of the commercial, personal use and subsistence fisheries. Although the newly created Tanana River test fishery program appears to show promise for in-season evaluation of run strength and timing, a limited database of only two years exists for these sites. Additionally, aerial assessment of spawning

escapement areas are totally dependent upon favorable weather and water conditions. In years when no in-season monitoring projects are available, the department will use established guideline harvest ranges in managing District 6.

Chinook and Summer Chum Salmon

The opening of the District 6 chinook and summer chum salmon commercial fishing season will be by emergency order. Since the 1988 season, opening dates for each subdistrict have been staggered with Subdistrict 6-A opening first. The purpose of the delayed season opening, and staggered openings for each subdistrict, is to allow the early portion of the chinook salmon migration to pass through prior to commercial fishing and to allow additional summer chum salmon harvest.

District 6 has a guideline harvest range of 600 to 800 chinook and 13,000 to 38,000 summer chum salmon. When the mid-point of the chinook salmon guideline harvest range or the upper end of the summer chum salmon guideline harvest range is taken, the District 6 early season will be closed unless there are indications that additional commercial fishing would not jeopardize achieving the chinook and summer chum salmon escapement objectives.

During years of average run timing, the first commercial fishing period in Subdistrict 6-A normally occurs during the first two weeks of July. During the early season in District 6, unless altered by emergency order, there will be two 42-hour commercial fishing periods per week, from 6:00 p.m. Friday until 12:00 noon Sunday, and from 6:00 p.m. Monday until 12:00 noon Wednesday. The early season will be closed by August 10.

Fall Chum and Coho Salmon

District 6 has a guideline harvest range of 2,750 to 20,500 fall chum and coho salmon combined. In recent years the entire district has opened by emergency order once it is determined that the run is well distributed throughout the district. Typically, in years of average return size and normal run timing, the first late season commercial fishing period will occur in early to mid-September.

Although the return of fall chum salmon to the mainstem Yukon River is expected to be average, the return of the Tanana River fall chum salmon is expected to be poor in 1990. Unless in-season monitoring projects indicate that the fall chum salmon escapement will be achieved, the late commercial fishing season in District 6 will be closed once the mid-point of the guideline harvest range of 11,600 fall chum and coho salmon is reached. In recent years, this level of harvest could be reached in as little as one commercial period. The department may allow additional commercial fishing once the guideline harvest range is taken, but only if there are indications

that the escapement objectives and subsistence needs will not be jeopardized.

Because of the expected poor Tanana River fall chum salmon return in 1990, the first late season commercial fishing period is anticipated to be 14 hours duration in Subdistrict 6-A, and 24 hours duration in Subdistricts 6-B and 6-C. This management strategy will assist in spreading the harvest over a larger portion of the run and increases the likelihood of additional fishing periods. The District 6 late season will be closed on or before September 30.

The 1990 coho salmon return to the Tanana River is projected to be average. The migratory timing of coho salmon is somewhat later, but does overlap with that of fall chum salmon. The commercial harvest of coho salmon is considered to be incidental to that of fall chum salmon. The magnitude of the coho salmon harvest is a function of the timing, frequency, and duration of the periods established for the more numerous fall chum salmon. If the guideline harvest range is exceeded in 1990, despite in-season indications of a poor fall chum salmon return, it will be because of the coho salmon component of the harvest.

To increase the coho salmon harvest with the anticipated reduced number of District 6 commercial openings in 1990, the department may delay the opening of the 1990 late season until mid-September to allow for a higher percentage of coho salmon in the harvest. However, fall chum salmon will continue to be the primary species of management concern.

Subsistence Fishery

Districts 4 and 5

In Districts 4 and 5, salmon may be taken by subsistence fishermen seven days per week until 24 hours prior to the opening of the commercial fishing season. Once the commercial salmon seasons are opened, the subsistence fishing schedule will coincide with commercial fishing periods. In Subdistrict 5-D, salmon may be taken by subsistence fishermen 7 days per week throughout the season.

During commercial salmon fishing closures in District 4 of greater than five days in duration, subsistence fishing will be allowed from 6:00 p.m. Sunday until 6:00 p.m. Friday.

In Subdistricts 5-A, 5-B and 5-C, for any commercial salmon fishing closures of greater than five days in duration, salmon may be taken by subsistence fishermen from 6:00 p.m. Tuesday until 6:00 p.m. Sunday.

District 6

A subsistence permit is required for the entire Tanana River drainage. Permits are available at the ADF&G office in Fairbanks. Subsistence fishers issued permits for the upper portion of Subdistrict 6-B, and all of Subdistrict 6-C, are required to report the number of salmon taken to the department within 18 hours after the end of each fishing period. Unless altered by emergency order, salmon may be taken by District 6 subsistence fishermen from 6:00 p.m. Monday until Noon Wednesday, and from 6:00 p.m. Friday until Noon Sunday throughout the season.

Personal Use Fishery

Since 1988, a personal use permit for the taking of salmon has been required for the entire Yukon and Tanana River drainage. Permits are available from the Alaska Department of Fish and Game. Salmon may be taken for personal use in accordance with the personal use regulations. Personal use regulations are based on the subsistence fishing regulations with some additional restrictions.

The personal use fishery for the Tanana River is further restricted by a permit harvest limit of 10 chinook, 75 summer chum salmon prior to August 15, and 75 fall chum and coho salmon combined after August 15. Additionally, in the subdistrict adjacent to the Fairbanks area, Subdistrict 6-C, there is a fishery harvest limit of 750 chinook, 5,000 summer chum and 5,200 fall chum and coho salmon. Once this harvest limit is reached, the personal use fishery in Subdistrict 6-C will be closed.

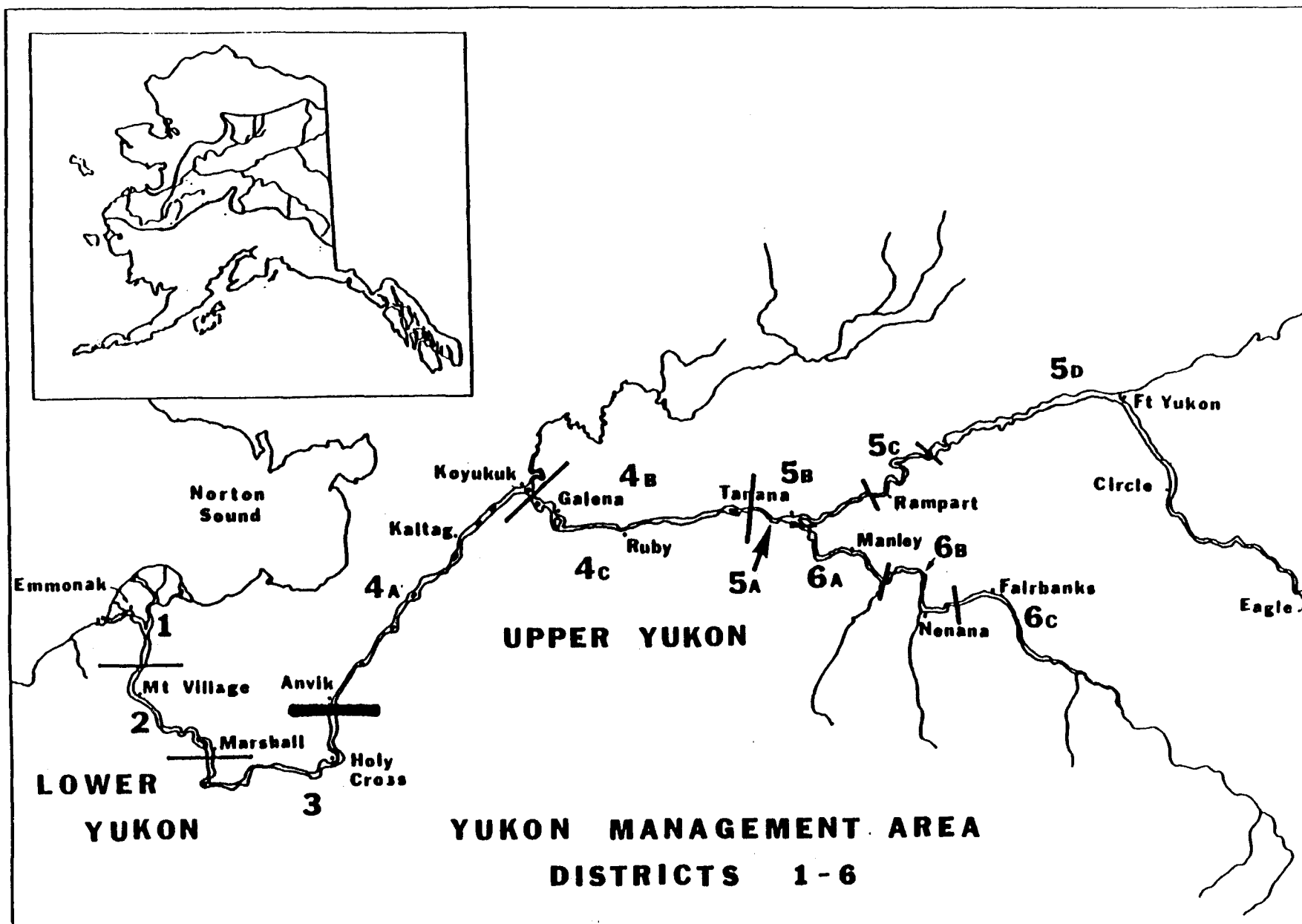


Figure 1. Yukon River management area, Districts 1 - 6, Alaska.

Table 1. Alaskan commercial sales of Yukon River salmon, 1961-1989. a

Year	Chinook	Summer Chum		Fall Chum		Coho
		Numbers	Roe	Numbers	Roe	
1961	119,664	-	-	42,461	-	2,855
1962	94,734	-	-	53,116	-	22,926
1963	117,048	-	-	0	-	5,572
1964	93,587	-	-	8,347	-	2,446
1965	118,098	-	-	23,317	-	350
1966	93,315	-	-	71,045	-	19,254
1967	129,656	10,935	-	38,274	-	11,047
1968	106,526	14,470	-	52,925	-	13,303
1969	91,027	61,966	-	131,310	-	15,093
1970	79,145	137,006	-	209,595	-	13,188
1971	110,507	100,090	-	189,594	-	12,203
1972	92,840	135,668	-	152,176	-	22,233
1973	75,353	285,509	-	232,090	-	36,641
1974	98,089	589,892	-	289,776	-	16,777
1975	63,838	710,295	-	275,009	-	2,546
1976	87,776	600,894	-	156,390	-	5,184
1977	96,757	534,875	-	257,986	-	38,863
1978	99,168	1,052,226	25,761	236,383	10,628	26,152
1979	127,673	779,316	40,217	359,946	18,466	17,165
1980	153,985	928,609	139,106	293,430	5,020	8,745
1981	158,018	1,006,938	189,068	466,451	11,285	23,680
1982	123,644	461,403	152,819	224,187	805	31,176
1983	147,910	744,879	149,999	302,598	5,064	13,320
1984	119,904	588,597	167,224	208,232	2,328	81,940
1985	146,188	516,997	248,625	267,744	2,525	57,672
1986	99,970	721,469	271,691	139,442	577	47,255
1987	134,760 b	442,238	121,968	0	0	0
1988 c	101,421	1,152,237	256,535	133,975	3,227	86,612
1989 d	101,840	959,994	288,549	270,195	14,749	83,353
5 Yr Avg						
1985-89	116,836	758,587	237,474	162,271	4,216	54,978
Alaska						
5 Yr Avg						
1985-89	110,195	699,031	0	111,930	0	46,320
Lower Yukon						
5 Yr Avg						
1985-89	6,641	59,556	237,474	50,342	4,216	8,659
Upper Yukon						

a Sales reported in numbers of fish sold in the round and pounds of unprocessed roe.

b Includes illegal sales of fish in Districts 5 and 6.

c Does not include 26,988 fall chum and 13,295 coho salmon sold in District 6 as part of a test fishing project.

d Does not include 440 chinook, 6,620 summer chum, 16,641 fall chum, and 2,130 coho salmon sold in District 6 as part of a test fishing project.

Table 2. Alaskan subsistence catch of Yukon River salmon, 1961-1989.

Year	Chinook	Summer Chum a	Fall Chum a,b	Coho a,b	Total
1961	21,488	305,317	101,772	9,192	437,769
1962	11,110	261,856	87,285	9,480	369,731
1963	24,862	297,094	99,031	27,699	448,686
1964	16,231	361,080	120,360	12,187	509,858
1965	16,608	336,848	112,283	11,789	477,528
1966	11,572	154,508	51,503	13,192	230,775
1967	16,448	206,233	68,744	17,164	308,589
1968	12,106	133,880	44,627	11,613	202,226
1969	14,000	156,191	52,063	7,776	230,030
1970	13,874	166,504	55,501	3,966	239,845
1971	25,684	171,487	57,162	16,912	271,245
1972	20,258	108,006	36,002	7,532	171,798
1973	24,317	161,012	53,670	10,236	249,235
1974	19,964	227,811	93,776	11,646	353,197
1975	13,045	211,888	86,591	20,708	332,232
1976	17,806	186,872	72,327	5,241	282,246
1977	17,581	159,502	82,771	16,333	276,187
1978	30,297	197,144	94,867	7,787	330,095
1979	31,005	196,187	233,347	9,794	470,333
1980	42,724	272,398	172,657	20,158	507,937
1981	29,690	208,284	188,525	21,228	447,727
1982	28,158	260,969	132,897	35,894	457,918
1983	49,478	240,386	192,928	23,895	506,687
1984	42,428	230,747	174,823	49,020	497,018
1985	39,771	264,828	206,472	32,264	543,335
1986	45,238	290,825	164,043	34,468	534,574
1987	53,124	275,914	361,663 c	84,894 c	775,595
1988	46,590	311,724	159,703	69,138	587,155
1989 d					
<hr/>					
5 Yr Avg 1984-88 Alaska	45,430	274,808	213,341	53,957	587,535
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5 Yr Avg 1984-88 Lower Yukon	15,234	65,725	24,898	12,401	118,258
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5 Yr Avg 1984-88 Upper Yukon	30,190	187,722	188,443	41,556	447,911

a Catches estimated for 1961-1976 since catches of salmon other than chinook salmon were not differentiated by species until 1977.

b Minimum estimates for 1961-1978 because surveys were typically conducted well before the end of the fishing season.

c Includes estimates of catches from illegal salmon and salmon roe sales in Districts 5 and 6.

d Data not available yet.

INTRODUCTION

This management plan was developed to inform fishermen, processors and other interested persons of the status of the 1990 Yukon River salmon runs and Department strategies that may be used to manage the various salmon fisheries.

The Division of Commercial Fisheries of the Alaska Department of Fish and Game is responsible for the management of commercial, subsistence, and personal use fisheries in the Yukon Area. The overall objective of the Department's research and management program is to manage the various salmon runs for optimum sustained yield.

The subsistence fishery is subject to few restrictions except in areas where intensive commercial fisheries occur. A majority of the commercial fishermen take salmon for both commercial and subsistence purposes. Therefore, in order to enforce commercial fishing regulations, it is necessary to place some restrictions on the subsistence fishery.

In 1986, the subsistence law was amended to limit subsistence hunting and fishing to rural Alaska residents. The Alaska Board of Fisheries created personal use salmon fisheries to allow continued participation in salmon fisheries by residents of non-rural communities. These fisheries are regulated much the same as subsistence fisheries, except that salmon taken for personal use may be used only for human consumption and for bait. In addition, personal use fishermen are required to secure a fishing permit from the local ADF&G office and to possess a resident sport fishing license. In December 1989, the Alaska Supreme Court overturned the 1986 subsistence law as unconstitutional. However, a stay has been granted which is in effect until July 1. All existing regulations are in effect until that time.

Management is made difficult and must take a conservative approach because of the complexity of harvesting mixed stocks, increased efficiency of the commercial fisheries, harvest allocation issues, and by the huge size of the drainage (300,000 mi²). There are limited escapement and return data on which to fully evaluate the effects of increased harvests. Due to the mixed-stock nature of the fishery, some tributary populations may be under or overharvested in relation to their actual abundance. Based on current knowledge, it is impossible to manage individual stocks independently, and there is concern that some spawning populations may be reduced to very low levels. Primary management tools are guideline harvest ranges established by the Alaska Board of Fisheries; and emergency orders (management orders), which are used to open and close the commercial fishing seasons, establish fishing period frequency and duration, and establish mesh size restrictions.

Table 3. Canadian catch of Yukon River chinook and fall chum salmon, 1961-1989.

Year	Chinook			Fall Chum		
	Commercial	Non-Commercial a	Total	Commercial	Non-Commercial a,b	Total
1961	3,446	9,800	13,246	3,276	5,800	9,076
1962	4,037	9,900	13,937	936	8,500	9,436
1963	2,283	7,794	10,077	2,196	25,500	27,696
1964	3,208	4,200	7,408	1,929	10,258	12,187
1965	2,265	3,115	5,380	2,071	9,718	11,789
1966	1,942	2,510	4,452	3,157	10,035	13,192
1967	2,187	2,963	5,150	3,343	13,618	16,961
1968	2,212	2,830	5,042	453	11,180	11,633
1969	1,640	984	2,624	2,279	5,497	7,776
1970	2,611	2,052	4,663	2,479	1,232	3,711
1971	3,178	3,269	6,447	1,761	15,150	16,911
1972	1,769	3,960	5,729	2,532	5,000	7,532
1973	2,199	2,323	4,522	2,806	7,329	10,135
1974	1,808	3,823	5,631	2,544	9,102	11,646
1975	3,000	3,000	6,000	2,500	18,100	20,600
1976	3,500	1,525	5,025	1,000	4,200	5,200
1977	4,720	2,807	7,527	3,990	8,489	12,479
1978	2,975	2,906	5,881	3,356	6,210	9,566
1979	6,175	4,200	10,375	9,084	13,000	22,084
1980	9,500	13,046	22,546	9,000	13,218	22,218
1981	8,593	9,216	17,809	15,260	7,021	22,281
1982	8,640	8,568	17,208	11,312	4,779	16,091
1983	13,027	5,925	18,952	25,990	3,500	29,490
1984	9,885	6,910	16,795	22,932	6,335	29,267
1985	12,573	6,728	19,301	35,746	5,519	41,265
1986	10,797	9,567	20,364	11,464	3,072	14,536
1987	10,864	6,800	17,664	40,591	3,889	44,480
1988	13,217	8,210	21,427	30,263	3,302	33,565
1989 c	9,789	7,414	17,203	17,549	2,338	19,887
5 Yr Avg 1985-89	11,448	7,744	19,192	27,123	3,624	30,747

- a Indian Food Fish, Domestic, and Sport fisheries combined.
b Includes small numbers of coho salmon taken at Old Crow.
c Preliminary estimates.